

Office Action Summary

Application No.

09/724,276

Applicant(s)

TURNER ET AL.

Examiner

Arlen Soderquist

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1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 163-210 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 163-210 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 18.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 5, 2003 has been entered.

2. Applicant is advised that should claims 171-172 and 174-175 be found allowable, claims 193-196 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 171-175 and 193-196 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldrich in view of Salzman (newly cited and applied) and optionally in view of Strah (newly cited and applied). In the pages of the Aldrich catalog, stirring equipment is described which anticipates the claimed stirring mechanism. This includes Teflon® coated stirring rods (pages 2108-2109) and a quick-disconnect chuck design. Aldrich does not teach a stirring shaft/mixing blade made without a metal core in the shaft or the specific structure of the quick-disconnect chuck.

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In the paper Salzman presents dynamic mixers turn more to glass fiber reinforced plastics. The use of reinforced plastics in mixers as impellers and shafts is discussed. The principal force for using reinforced plastics is the cost advantage. The A6000 impeller produces more flow/h than any other mixing impeller; the A410 is tailored to perform efficiently over a wide range of fluid viscosities. Figure 6 shows and discusses a stirrer that has a metal shaft and blade (impeller) replaced by the reinforced plastics and states that there are no restrictive mechanical design considerations involved in the use of the plastics.

In the patent Strah teaches a single hand manipulatable quick-connect-disconnect fluid line coupler with female body portion and a male connector portion attachable to respective line ends by integral fittings. The body is proportioned for manual grasping with two-finger manipulatability of a slidable actuating sleeve; and the body slot convergency and the disposition therein of parallel locking pins engageable with a male portion circumferential locking groove are so related and a simple seal structure provided so as to afford a firm sealed lock under high pressure while facilitating manual actuation in a low-cost structure. In the first paragraph Strah teaches that various types of quick-connect, quick-disconnect type fluid line couplers are known to the prior art wherein a male element on one line end is sealingly received in a female body component on the other line end and thereto locked by various latching devices such as detent spring elements, catches, spring-biased detent balls; some of these being actuated by a sliding sleeve camming the elements or releasing the elements performing the locking function with respect to a groove on the received male connector end; and as well by various bayonet locking systems.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the fiber reinforced materials of Salzman in the stirring apparatus of Aldrich because of the cost advantage associated with using the reinforced materials compared to metals as taught by Salzman. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a notoriously well known quick-disconnect coupling mechanism such as an annular groove or a bayonet system as taught by Strah for the known advantages or the cost as taught by Strah.

5. Claims 163-170 and 176-192 and 197-210 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich, Salzman or Strah as

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explained above. In the paper Nelles presents the development of experimental reactors for heterogeneous solid-liquid processes. A laboratory research installation consists of a measuring vessel for the main reactant, a charging vessel (for feeding a definite amount of the main reactant), a reactor, 2 thermostats, and a magnetic, multipath valve for selecting one or the other of the thermostat liquids, which have different temperatures. The reactor is a vertical cylindrical jacketed pressure vessel (volume 2 liters, 20 atmospheres), fitted with a samples mounted in the bottom and a stirring mechanism mounted in the top. The stirrer is a combination of an anchor (open toward the bottom) and a helix that wipes the wall. The stirrer rpm is 85-2100. Details of the reactor, stirring mechanism, and sampling device are presented in diagrams. Samples can be taken during the reaction under pressure. The apparatus is suitable for heterogeneous polymerization and precipitation reactions. Nelles does not teach a plurality of reactors, a magnetic drive for the stirring means or specifics of a multi-piece stirrer.

In the patent Lebl teaches apparatus and method for combinatorial chemistry synthesis. In a first embodiment, this invention includes an integrated robot apparatus for performing combinatorial chemical synthesis protocols and having interchangeable work-stations, robot arm tools, and reaction vessels and reaction vessel arrays. The work-stations and tools are specialized to perform tasks necessary for the synthesis in a plurality of the reaction vessels grouped in a plurality of the reaction vessel arrays. Preferably, these elements function interchangeably because they have standardized sizes and conformation. The work-stations and tools include those for fluid dispensing or aspirating from individual reaction vessels or from all the reaction vessels in an array simultaneously. The reaction vessels can include, alternatively, stackable, ball-sealed reaction vessels, microtitre-like reaction vessel arrays, arrays of independent reaction vessels, valve-sealed reaction vessels (figures 8-11 and the description thereof for the disclosure), septum-sealed reaction vessels, and syringe reaction vessels. In particular figure 8A shows a reaction block having a common plate (211) on top of the reaction vessels (213) which includes holes (216) for access to the interior of the reaction vessels. In alternative embodiments, this invention includes these work-stations, tools, reaction vessels and reaction vessel arrays in various combinations or sub-combinations either for use in partially integrated robots or for manual or stand-alone use.

In the paper Corkan discusses an automation system with the ability to work relentlessly, precisely, strategically, and autonomously in pursuit of scientific goals. Some years' work has been aimed at developing the hardware and software architecture for an automated workstation. The workstation is designed for microscale experimentation in relatively clean domains of synthetic chemistry. The workstation is shown in figure 2 and includes robotic and a stirring assembly for multiple samples. The stirring assembly can heat/cool the samples individually. A schematic of the software system and how it is used to control the device is presented in figure 3. The paper also describes the approaches to performing experiments in parallel. Parallelism originates chiefly through simultaneous processing of samples at semi-autonomous hardware modules, at the user interface, and through the use of a scheduler. Experimental throughput can be increased by up to ten-fold by this approach.

In the abstract of the Salvat patent publication, a device for stirring a reactor contains a shaft which is connected to a drive by means of a magnetic clutch. Both clutch magnets are mounted against each other perpendicularly to the rotation axis (i.e., the magnet attached to the motor shaft is placed outside the reactor and the magnet attached to the stirrer is placed inside the reactor). The reactor vessel is completely tight.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide multiple Nelles reaction vessels as taught by Corkan and Lebl including a common cover (plate) as taught by Lebl because of the ability to automate the process or the ability to increase the rate at which information on the synthetic processes are gathered as taught by Corkan and Lebl and the simultaneous control of access to the reaction vessels as taught by Lebl. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a drive mechanism as taught by Salvat or Aldrich and the stirring paddles taught by Aldrich or Salzman in the Nelles reactor because of the ability to agitate the reactor contents without exposing worry of escape of the contents due to a failed seal, the ability to change the stirring paddles depending on the needs of the system being agitated and the cost of plastic materials as taught by Aldrich, Salvat and Salzman. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a head construction as taught by Lebl for the Nelles reactor because of its ability to allow injection of materials into the reactor.

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6. The terminal disclaimer filed on August 5, 2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent 6,306,658 has been reviewed and is accepted. The terminal disclaimer has been recorded.

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. The newly cited and applied Salzman reference teaches the benefits of using plastic materials for both the shaft and blade portion of the stirring mechanism compared to metal components. Relative to claims 172, 173 and 194 examiner is not clear if applicant is arguing that the actual products do not have the structure claimed or simply that the references do not teach any particular structure. If the Aldrich structures do not have the specifically claimed structure then replacing them with a notoriously well known coupling structure as shown by Strah would have been obvious for the known advantages. Upon further consideration examiner realized that a figure such as 8A of Lebl was also included in the consideration for the claimed plate of claims such as 176.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (703) 308-3989. The examiner's schedule is variable between the hours of about 5:30 AM to about 5:00 PM on Monday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Numbers for faxing official papers are 703-872-9310 (before finals), 703-872-9311 (after-final), 703-305-7718, 703-305-5408 and 703-305-5433. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


September 22, 2003

**ARLEN SODERQUIST
PRIMARY EXAMINER**